What is claimed is:

- 1. A method of depositing a silicon based film on a wafer characterized in that at least one silicon containing precursor and at least one chemical precursor are introduced into a hot-wall thermal chemical vapor deposition chamber housing a wafer, and wherein the precursors react to form a silicon based film on the wafer at a deposition rate of approximately 1000 Å/min. or greater.
- 2. The method of claim 1 wherein said method is carried out at a wafer temperature of up to about 550 °C.
- 3. The method of claim 1 wherein said at least one silicon containing precursor is comprised of any one of or combination of SiH₄, SiCl₂H₂, Si₂H₆, Si₂Cl₆, SiCl₃H, or SiCl₄.
- 4. The method of claim 1 wherein said at least one silicon containing precursor is Si₂H₆ and said at least one chemical precursor is NH₃.
- 5. The method of claim 1 wherein said at least one chemical precursor is a nitrogen source selected from the group of NH₃, alkyl amine, hydrazine, alkylhydrazine, alkyl amide, alkyl imide, and atomic nitrogen.
- 6. The method of claim 1 wherein said method is carried out at a pressure in the range of about 10 to 500 Torr.
- 7. The method of claim 1 wherein said method is carried out at a pressure in the range of about 100 to 130 Torr.
- 8. The method of claim 1 further comprising introducing an inert gas into the hot wall thermal chamber.
- 9. The method of claim 1 further comprising introducing an oxidant into the hot wall thermal chamber, and wherein the oxidant is comprised of any one of or combination of ozone, O₂, NO, N₂O, H₂O, H₂O₂ and atomic oxygen.
- 10. The method of claim 1 wherein the silicon containing precursor is conveyed at a flow rate in the range of 10 sccm to 500 sccm.
- 11. A method of depositing a silicon based film on a wafer in a hot-wall thermal chemical vapor deposition chamber, comprising the steps of:

heating the wafer to a temperature in the range of 400 to 550°C; reacting at least one silicon containing precursor and ate least one nitrogen

containing precursor to deposit a silicon based film on the wafer.

12. The method of claim 11 wherein said at least one silicon containing precursor is comprised of any one of, or combination of SiH₄, SiCl₂H₂, Si₂H₆, Si₂Cl₆, SiCl₃H, or SiCl₄.

- 13. The method of claim 11 wherein said at least one silicon containing precursor is Si₂H₆ and said at least one nitrogen precursor is NH₃.
- 14. The method of claim 11 wherein said at least one nitrogen precursor is comprised of any one of or combination of NH₃, alkyl amine, hydrazine, alkylhydrazine, alkyl amide, alkyl imide or atomic nitrogen.
- 15. The method of claim 11 wherein said method is carried out at a pressure in the range of about 10 to 500 Torr.
- 16. The method of claim 11 further comprising introducing an oxidant into the hot wall thermal chamber, and wherein the oxidant is comprised of any one of or combination of ozone, O₂, NO, N₂O, H₂O₂ and atomic oxygen.
- 17. A method of depositing a silicon based film on a wafer in a hot-wall thermal chemical vapor deposition chamber, comprising the steps of:

heating the wafer to a temperature of up to approximately 550 °C; establishing the pressure in the chamber in the range of approximately 10 to 500 Torr;

conveying at least one silicon containing precursor comprised of any one of, or combination of SiH₄, SiCl₂H₂, Si₂H₆, Si₂Cl₆, SiCl₃H, or SiCl₄, and at least one nitrogen containing precursor comprised of any one of or combination of NH₃, alkyl amine, hydrazine, alkylhydrazine, alkyl amide, alkyl imide or atomic nitrogen; and

reacting said silicon and nitrogen containing precursors to deposit a silicon based film on the wafer.